Bloomberg Philanthropies
INITIATIVE FOR GLOBAL ROAD SAFETY

JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

International
Injury Research Unit

Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS) 2020–2025 Roadside Observational Study

Technical Appendix for Dhaka North Round Three

Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS) 2020–2025 Roadside observational study

Technical appendix for Dhaka North Round Three

The Johns Hopkins International Injury Research Unit partnered with the CIPRB to conduct roadside observations in Round three (November 2022). The methods for these findings were developed by the Johns Hopkins International Injury Research Unit and implemented in collaboration with the CIPRB. This report provides results from observational surveys that represent population-level (citywide) prevalence of important road safety risk factor, speed in Round three. For speed, there were approximately 103,306 observations.

Observation sites were selected to obtain a representative sample of vehicles and road users in each city, conditional on the safety of observers. There were 20 observation sites per risk factor, and a standardized protocol was used with vehicles selected for observation in a systematic quasi-random fixed sequence. Observations were performed between 06:30 a.m. and 07:00 p.m. on both weekend days and weekdays. The methods were designed to estimate citywide prevalence and cannot provide insights into interventions conducted in specific locations in the city.

This technical appendix was created on March 10th, 2023 by the Johns Hopkins International Injury Research Unit using the following files:

- BIGRS3_GAR tech appendix_230310_full.do
- R3_DhakaNorth_BIGRS3 speed_full.dta

Table of Contents

1. Speeding
1.1. Total number of observed vehicles
1.2. Prevalence of exceeding the posted speed limit and summary measures of speed among all vehicles
1.3. Histogram of speed among all vehicles
1.4. Prevalence of exceeding the posted speed limit and summary measures of speed by vehicle type
1.5. Prevalence of exceeding the posted speed limit and summary measures of speed by vehicle type group
1.6. Histogram of speed by vehicle type group
1.7. Prevalence of exceeding the posted speed limit and summary measures of speed by road type
1.8. Prevalence of traveling faster than 30 km/h in collector/local roads and 50 km/h in arterial roads
1.9. Histogram of speed by road type
1.10. Prevalence of exceeding the posted speed limit by extent of excess and summary measures of speed by speed limit
1.11. Prevalence of exceeding the posted speed limit by extent of excess and vehicle type
1.12. Prevalence of exceeding the posted speed limit and summary measures of speed by vehicle ownership
1.13. Prevalence of exceeding the posted speed limit and summary measures of speed by day of the week
1.14. Prevalence of exceeding the posted speed limit and summary measures of speed by weekday/weekend
1.15. Prevalence of exceeding the posted speed limit and summary measures of speed by observation session start time
1.16. Summary measures of speed among vehicles in free flow speed
1.17. Summary measures of speed among vehicles in free flow speed by vehicle type group
1.18. Summary measures of speed among vehicles in free flow speed by road type
1.19. Summary measures of speed among vehicles in free flow speed by speed limit
1.20. Summary measures of speed among vehicles in free flow speed by vehicle ownership
1.21. Summary measures of speed among vehicles in free flow speed by day of the week
1.22. Summary measures of speed among vehicles in free flow speed by observation session start time

1. Speeding

Key findings

- Overall, 10% of all vehicles were observed to be driving above the posted speed limit.
- When disaggregated by vehicle type, heavy vehicles were by far the leading type of vehicle exceeding the speed limit (20%), compared to light vehicles (8%) and motorcycles (3%).
- Prevalence of speeding over the posted limit was the highest on arterial (12%), and 9% of the vehicles on the arterial roads speed over 50 Km/hour.
- Nearly, 47% of the vehicles on collector/local roads were traveling above the recommended speed of 30km/h.
- When disaggregated by ownership, commercial vehicles had the highest prevalence of speeding at 18%. This was followed by ride-share vehicles, at 15%.
- Speeding over the posted limit is the most prevalent on Saturdays (16%).

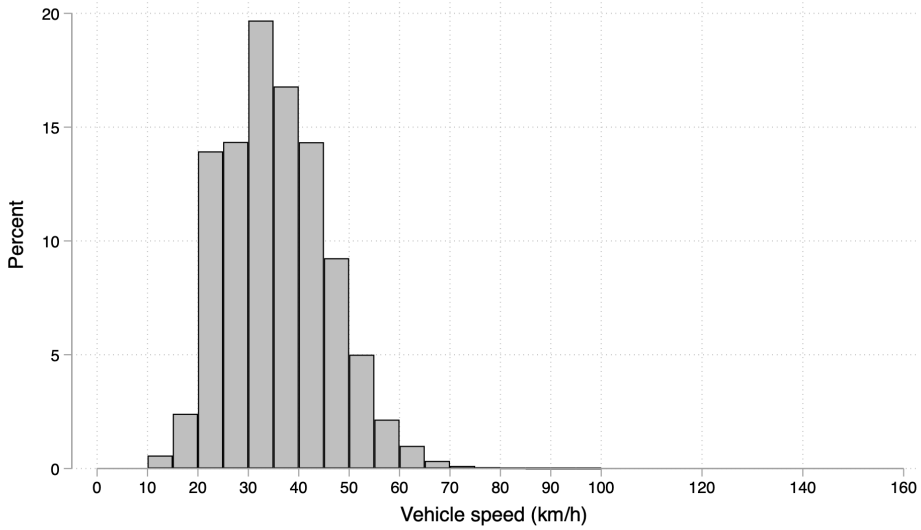
1.1. Total number of observed vehicles

103,306

1.2. Prevalence of exceeding the posted speed limit and summary measures of speed among all vehicles

N	Prevalence (%)	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
102,587	10	35	10	34	46

1.3. Histogram of speed among all vehicles



1.4. Prevalence of exceeding the posted speed limit and summary measures of speed by vehicle type

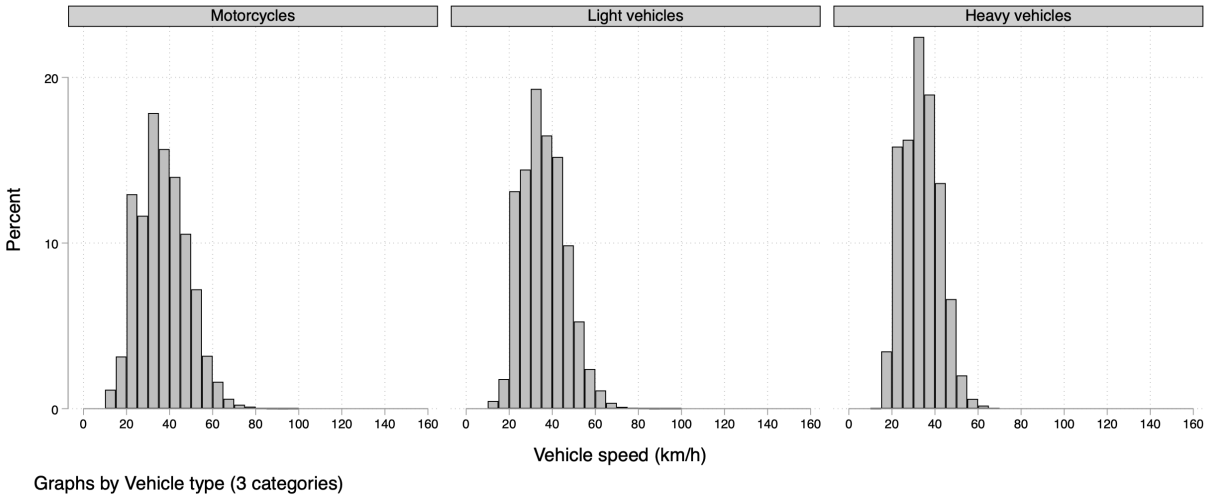
Vehicle type	n	Prevalence (%)	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
Sedans/Saloons	34,519	4	36	10	35	47
Pickup/Light trucks	4,907	22	31	9	31	41
Truck/Large trucks	363	80	37	7	36	44
Buses	10,317	18	33	9	32	42
Minibuses/Minivans	4,712	33	35	10	35	45
SUVs	6,526	5	35	11	34	47
Three-wheelers	14,468	23	32	8	32	42
Motorcycles	26,775	3	36	11	35	48

1.5. Prevalence of exceeding the posted speed limit and summary measures of speed by vehicle type group

Vehicle type group	n	Prevalence (%)	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
Motorcycles	26,775	3	36	11	35	48
Light vehicles*	50,664	8	35	10	35	46
Heavy vehicles†	10,680	20	33	9	32	42

* Light vehicles include sedans/saloons/SUVs/4WDs, minibuses/minivans, and pickup/light trucks.
† Heavy vehicles include buses and trucks/large trucks.

1.6. Histogram of speed by vehicle type group



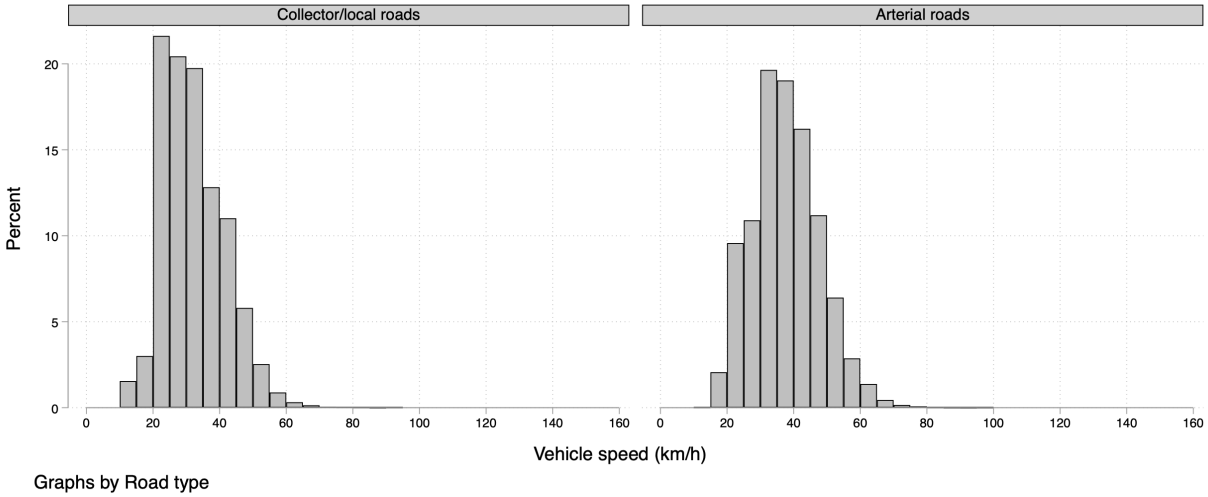
1.7. Prevalence of exceeding the posted speed limit and summary measures of speed by road type

Road type	n	Prevalence (%)	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
Collector/local	36,751	7	31	9	30	42
Arterial	65,836	12	37	10	36	47

1.8. Prevalence of traveling faster than 30 km/h in collector/local roads and 50 km/h in arterial roads

	n	Prevalence (%)
> 30 km/h in collector/local	37,377	47
> 50 km/h in arterial	65,929	9

1.9. Histogram of speed by road type



1.10. Prevalence of exceeding the posted speed limit by extent of excess and summary measures of speed by speed limit

Speed limit (km/h)	n	Prev. of speed > limit (%)	Prev. of speed > limit + 10 km/h (%)	Prev. of speed > limit + 20 km/h (%)	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
30	8,594	35	0	0	28	8	27	37
40	13,752	13	0	0	31	8	31	40
50	10,642	6	0	0	35	10	35	46
60	11,164	2	0	0	41	10	41	51
70	1,388	0	0	0	43	6	42	48
80	1,534	0	0	0	49	12	51	60
999	0	.	0	0	36	9	40	45

1.11. Prevalence of exceeding the posted speed limit by extent of excess and vehicle type

Speed limit (km/h)	n	Prev. of speed > limit (%)	Prev. of speed > limit + 10 km/h (%)	Prev. of speed > limit + 20 km/h (%)
Sedans/Saloons	34,519	4	0	0
Pickup/Light trucks	4,907	22	0	0
Truck/Large trucks	363	80	0	0
Buses	10,317	18	0	0
Minibuses/Minivans	4,712	33	0	0
SUVs	6,526	5	0	0
Three-wheelers	14,468	23	0	0
Motorcycles	26,775	3	0	0

1.12. Prevalence of exceeding the posted speed limit and summary measures of speed by vehicle ownership

Vehicle ownership type	n	Prevalence (%)	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
Commercial	32,643	18	34	10	34	44
Taxi	142	6	39	10	38	50
Ride-share	1,329	15	36	10	36	48
Other	68,473	6	35	10	35	46

1.13. Prevalence of exceeding the posted speed limit and summary measures of speed by day of the week

Day of the week	n	Prevalence (%)	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
Monday	9,873	9	33	10	30	44
Tuesday	5,756	10	30	10	27	41
Wednesday	21,943	8	36	10	36	46
Thursday	21,218	9	35	10	35	45
Friday	16,253	11	37	9	37	46
Saturday	19,299	16	35	12	33	48
Sunday	8,245	5	31	10	29	44

1.14. Prevalence of exceeding the posted speed limit and summary measures of speed by weekday/weekend*

	n	Prevalence (%)	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
Weekday	75,043	9	35	10	35	45
Weekend	27,544	13	34	11	32	47

* The weekend is Saturday and Sunday.

1.15. Prevalence of exceeding the posted speed limit and summary measures of speed by observation session start time

Session start time	n	Prevalence (%)	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
6:30 a.m. to 9 a.m.	19,275	13	35	10	35	46
9:01 a.m. to 11 a.m.	21,153	8	34	10	34	45
11:01 a.m. to 2 p.m.	22,370	12	35	11	35	46
2:01 p.m. to 4 p.m.	20,630	10	35	10	35	46
4:01 p.m. to 7 p.m.	19,159	9	34	10	34	45

The following analyses on speeding are restricted to vehicles in free flow speed, which are defined as those traveling faster than the speed limit when/where there is no impedance for drivers to speed freely, such as bad weather, a junction, tight bend, speed bump, stop sign, crosswalk, and law enforcement activities nearby.

1.16. Summary measures of speed among vehicles in free flow speed

n	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
5,573	43	9	41	52

1.17. Summary measures of speed among vehicles in free flow speed by vehicle type group

Vehicle type group	n	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
Motorcycles	775	54	11	52	66
Light vehicles*	2,623	42	8	41	51
Heavy vehicles†	2,175	40	7	40	47

* Light vehicles include sedans/saloons/SUVs/4WDs, minibuses/minivans, and pickup/light trucks.
† Heavy vehicles include buses and trucks/large trucks.

1.18. Summary measures of speed among vehicles in free flow speed by road type

Road type	n	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
Collector/local	1,174	40	9	38	47
Arterial	4,398	43	9	42	53

1.19. Summary measures of speed among vehicles in free flow speed by speed limit

Speed limit (km/h)	n	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
30	2,936	37	5	36	42
40	1,769	45	4	44	49
50	623	55	4	53	59
60	239	66	5	65	71
80	5	86	4	85	93

1.20. Summary measures of speed among vehicles in free flow speed by vehicle ownership

Vehicle ownership type	n	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
Commercial	4,199	41	7	41	50
Taxi	3	35	6	32	42
Ride-share	15	56	9	55	68
Other	1,355	48	11	45	62

1.21. Summary measures of speed among vehicles in free flow speed by day of the week

Day of the week	n	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
Monday	407	41	10	39	51
Tuesday	326	41	11	38	51
Wednesday	1,047	43	9	42	53
Thursday	1,111	43	8	42	51
Friday	877	44	8	43	49
Saturday	1,635	43	9	41	53
Sunday	169	41	11	37	59

1.22. Summary measures of speed among vehicles in free flow speed by observation session start time

Session start time	n	Mean (km/h)	Std. dev. (km/h)	Median (km/h)	85th pctl (km/h)
6:30 a.m. to 9 a.m.	1,270	42	8	41	51
9:01 a.m. to 11 a.m.	934	42	9	41	51
11:01 a.m. to 2 p.m.	1,295	43	9	41	52
2:01 p.m. to 4 p.m.	1,033	44	10	42	53
4:01 p.m. to 7 p.m.	1,040	43	9	42	52